

Claims

What is claimed is:

1. A strainer assembly comprising:

5 a strainer body defining an internal chamber and having a primary opening formed therein, said strainer body comprising a wall encompassing at least a portion of said internal chamber, said wall including a series of flow control apertures formed therein, wherein said series of flow control apertures comprises at least a first flow control aperture proximate to said primary opening and a second flow control aperture distal to said primary opening, wherein said 10 second flow control aperture has an area greater than the area of said first flow control aperture, and wherein said first flow control aperture and said second flow control aperture are covered by screen.

2. The strainer assembly of claim 1, wherein said wall comprises a flow control plate having

15 at least one of said first flow control aperture and said second flow control aperture formed therein.

3. The strainer assembly of claim 1, wherein each flow control aperture in said series of

flow control apertures has an area greater than the area of each flow control aperture in said 20 series that is proximate to said primary opening.

4. The strainer assembly of claim 2, wherein said primary opening is centrally aligned in said flow control plate and said series of flow control apertures is radially aligned with said primary opening.

5 5. The strainer assembly of claim 2, wherein said flow control plate further comprises a standoff formed thereon separating said screen from said flow control apertures.

6. The strainer assembly of claim 1, wherein said wall comprises a first flow control plate and a second flow control plate.

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7. The strainer assembly of claim 6, wherein each of said first flow control plate and said second flow control plate comprises a plurality of flow control apertures formed therein.

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8. The strainer assembly of claim 7, wherein said primary opening is formed in said first flow control plate.

9. The strainer assembly of claim 8, wherein said second flow control plate comprises a secondary opening formed therein.

20 10. The strainer assembly of claim 9, wherein said primary opening and said secondary opening are axially coaligned.

11. The strainer assembly of claim 9, wherein said plurality of flow control apertures of said first flow control plate are radially aligned with said primary opening and said plurality of flow control apertures of said second flow control plate are radially aligned with said secondary opening.

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12. The strainer assembly of claim 6, wherein said first flow control plate and said second flow control plate are supported by a tension rod.

13. The strainer assembly of claim 6; wherein said wall further comprises a rim disposed
10 between said first and second flow control plates.

14. The strainer assembly of claim 13, wherein said rim includes flow control apertures formed therein.

15 15. The strainer assembly of claim 6, further comprising a first screen plate aligned with said first flow control plate and a second screen plate aligned with said second flow control plate.

16. A strainer assembly comprising:

a strainer body comprising:

20 a first flow control plate having a primary opening and a first plurality of flow control apertures formed therein, wherein a collective area of said first plurality flow control apertures increases distally from said primary opening; and,

a second flow control plate connected to said first flow control plate and having a secondary opening and a second plurality of flow control apertures formed therein, wherein a collective area of said second plurality of flow control apertures increases distally from said secondary opening.

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17. The strainer assembly of claim 16, further comprising a screen extending across said first plurality of flow control apertures and said second plurality of flow control apertures.

18. The strainer assembly of claim 17, wherein said screen comprises a first screen plate
10 aligned with said first flow control plate and a second screen plate aligned with said second flow control plate.

19. The strainer assembly of claim 16, wherein said first flow control plate and said second flow control plate are supported by at least one tension rod.

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20. The strainer assembly of claim 16, wherein the collective area of said first plurality of flow control apertures over a defined unit area increases distally from said primary opening.

21. The strainer assembly of claim 16, wherein the collective area of said second plurality of flow control apertures over a defined unit area increases distally from said secondary opening.

22. A suction strainer system comprising the strainer assembly of claim 16 connected in series to a second strainer assembly.

23. A suction strainer system comprising the strainer assembly of claim 16 connected parallel to a second strainer assembly.

5 24. A suction strainer system for connection to an inlet of a suction pipe comprising:
a plurality of strainer assemblies in flow communication with said inlet of said suction pipe, wherein at least one strainer assembly of said plurality of strainer assemblies comprises:
a strainer body defining a first internal chamber and having a primary opening formed therein, said strainer body having a wall encompassing at least a portion of said first internal 10 chamber, said wall including a first plurality of flow control apertures formed therein, wherein the collective area of said first plurality of flow control apertures over a defined unit area increases distally from said primary opening.

15 25. The suction strainer system of claim 24, wherein said plurality of strainer assemblies are sequentially aligned along a flow line to said inlet.

26. The suction strainer system of claim 25, wherein said internal chamber of said strainer body forms a portion of said flow line.

20 27. The suction strainer system of claim 21, wherein each of said plurality of strainer assemblies comprises a series of flow control apertures formed therein and wherein the aggregate area of each of said flow control apertures of each of said plurality of strainer assemblies increases distally from said inlet.

28. The suction strainer system of claim 24, wherein said strainer body comprises a secondary opening formed therein, upstream of said primary opening.

5 29. The suction strainer system of claim 28, wherein said plurality of strainer assemblies comprises a second strainer assembly comprising a strainer body defining a second internal chamber and having a primary opening formed therein, wherein said primary opening is upstream of said secondary opening of said first strainer assembly.

10 30. The suction strainer system of claim 29, wherein said strainer body of said second strainer assembly comprises a second plurality of flow control apertures formed therein and wherein the collective area of said second plurality of flow control apertures in defined unit area increases distally from said primary opening of said body of said second strainer assembly.

15 31. The suction strainer system of claim 24, wherein said strainer body comprises a first flow control plate and a second flow control plate.

20 32. The suction strainer system of claim 31, wherein said primary opening of said first strainer assembly is formed in said first flow control plate and a secondary opening is formed in said second flow control plate.

33. The suction strainer system of claim 32, wherein said first flow control plate includes a plurality of flow control apertures radially aligned with said primary opening, wherein the

collective area of said flow control apertures over a defined unit area increases distally from said primary opening..

34. The suction strainer system of claim 24, wherein said first strainer body comprises a

5 screen extending across said flow control apertures.

35. The suction strainer system of claim 24, wherein said plurality of strainer assemblies are connected in series.

10 36. The suction strainer system of claim 24, wherein said plurality of strainer assemblies are connected in parallel.

37. A suction strainer system for connection to a suction inlet of a pump, said strainer assembly comprising:

15 a plurality of strainer assemblies in flow communication with the suction inlet, wherein each strainer assembly of said plurality of strainer assemblies comprises:

a strainer body defining a internal chamber and comprising a first flow control plate and a second flow control plate, said first flow control plate having a primary opening and a first plurality of flow control apertures, wherein the collective area of said first plurality of flow 20 control apertures over a defined unit area increases distally from said primary opening, wherein said second flow control plate has a second plurality of flow control apertures formed therein and a secondary opening, and wherein the collective area of said second plurality of flow control apertures over a defined unit area increases distally from said secondary opening.

38. The suction strainer system of claim 37, wherein screen extends across said first and second pluralities of flow control apertures of each strainer body.

39. The suction strainer system of claim 37, wherein the aggregate area of flow control 5 apertures in each strainer body increases distally from said suction inlet.

40. A strainer assembly comprising a plurality of flow control apertures formed therein, said flow control apertures being so sized and arranged that fluid flowing into the strainer assembly exhibits a substantially uniform approach velocity through substantially all of said plurality of 10 flow control apertures.

41. A strainer assembly for taking in fluid at a plurality of fluid entry locations and straining debris from the fluid, the assembly including a plurality of strainer bodies and being characterized by a uniform approach velocity achieved at substantially all fluid entry locations 15 along the strainer assembly.